



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/511,188	02/23/2000	Kenji Shimoyama	000202	4217

23850 7590 04/10/2003

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

FLORES RUIZ, DELMA R

ART UNIT	PAPER NUMBER
----------	--------------

2828

DATE MAILED: 04/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/511,188

Applicant(s)

SHIMOYAMA ET AL.

Examiner

Delma R. Flores Ruiz

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/16/2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 30 December 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 – 53 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: Claim 1 for example presents a mere recitation of a group of elements without disclosing how said elements are interrelated in order to perform as an apparatus capable of carrying through any perceptible actions. There is no structural or means recited in the claim, for performing the apparatus, example: substrate, stripe-shaped, ridge type, protection film, action layer, etc. One of ordinary skill in the art will not understand the apparatus since the components of the apparatus are not clearly stated at the claim as a complete structure.

Claim Objections

Claims 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Applicant is advised that should claim 9 be found allowable, claim 1 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 9 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 42 – 45, 48, and 51 – 53 are rejected under 35 U.S.C. 102(b) as being anticipated by Adachi et al (5,523,256).

Regarding claims 1, 42 – 45, 48, and 51 – 53, Adachi discloses a semiconductor optical device apparatus comprising: a substrate (Fig. 3 Character 1); a compound semiconductor layer containing an active layer (Fig. 3 Character 4); a protection film (Fig. 3 Character 6) having a stripe-shaped opening formed on the compound semiconductor layer; and a ridge type compound semiconductor layer having a smaller refractive index than the refractive index of the active layer; the ridge type compound semiconductor layer being formed as to cover the stripe-shaped opening (Column 1, lines 50 – 64, Column 4, lines 58 – 68, and Column 5, Lines 1 – 11, 20 – 26, 48 – 63), wherein the compound semiconductor layer, the protection film and ridge type compound semiconductor layer are formed on the substrate, and wherein the semiconductor optical device apparatus satisfies either ob both of the following conditions (a) and (b):

(A): a width (W_c) at an opening center of the stripe-shaped opening is different from a width (W_f) of the opening front end; and

(B): a width (W_c) at an opening center of the stripe-shaped opening is different from a width (W_r) of the opening rear end (Column 1, lines 50 – 64, Column 4, lines 58 – 68, and Column 5, Lines 1 – 11, 20 – 26, 48 – 63, Column 11, Lines 38 – 53, Column 12, Lines 4 – 41, Column 16, Lines 11 – 37, Column 17, Lines 1 – 12, 28 – 36, Column

18, Lines 62 – 68, Column 19, Lines 1 – 8, 45 – 49, Column 20, Lines 20 – 65, Column 21, Lines 18 – 51, Column 22, Lines 64 – 68, Column 23, Lines 1 – 18, 43 – 49, Column 25, Lines 6 – 23, 32 – 48, 64 – 68, Column 26, Lines 1 – 5, 49 – 55, and Column 28, Lines 36 – 47).

Regarding claim 42 Adachi discloses the protective film (see Fig. 3, Character 6) is formed on a ridge top and a side surface of the ridge type compound semiconductor layer.

Regarding claim 43 Adachi discloses the contact film (see Fig. 3, Character 9) if formed to cover a ridge top and side surface of the ridge type compound semiconductor layer.

Regarding claim 44 Adachi discloses a crystal-grown plane of the substrate is plane or its crystallographically equivalent plane, and wherein a longitudinal direction of a stripe-shaped opening of the protection film is [01 – 1] direction or its crystallographically equivalent direction (see Figs. 3 - 56B, said limitation only recites facts and features that are well known and expected, the same features that essentially result from the use or application of a crystal-grown plane of the substrate is plane or its crystallographically equivalent plane, and wherein a longitudinal direction of a stripe-

shaped opening of the protection film is [01 – 1] direction or its crystallographically equivalent direction , and therefore said limitations are said to be inherently disclosed in the teachings of Adachi).

Regarding claim 48 Adachi discloses one layer among the clad layer (see Fig. 3, Character 5) having a refractive index smaller than that of the active layer formed below the active layer, the active layer, and the clad layer having the refractive index smaller than that of the active layer formed on the active layer is made of a compound represented by $(Al_x Ga_{1-x})_y In_{1-y}P$ (Column 1, Lines 14 – 36, Column 11, Lines 38 - 50).

Regarding claim 51 – 53 Adachi discloses the semiconductor optical device apparatus is a semiconductor laser, semiconductor light-emitting device and semiconductor optical amplifier (see Figs. 3 - 56B, Abstract, and Column 28, lines 9 – 25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 – 41, 46 – 47, and 49 – 50 are rejected under 35 U.S.C. 103(a) as being obvious over Adachi et al (5,523,256).in view of Adachi et al (5,974,068).

Regarding claims 2 – 41 Hashimoto discloses the claimed invention except for the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \geq 0.2 \mu$ and a condition $IW_r - W_c \geq 0.2 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \geq 0.5 \mu$ and a condition $IW_r - W_c \geq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 0.5 \mu$ and a condition $IW_r - W_c \leq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 5 \mu$ and a condition $IW_r - W_c \leq 5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 3 \mu$ and a condition $IW_r - W_c \leq 3 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 2 \mu$ and a condition $IW_r - W_c \leq 2 \mu$, the semiconductor optical device apparatus satisfies a condition of $W_c \geq 2.2 \mu$ and $W_c \leq 50 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f \geq W_c$ and $W_r \geq W_c$, and $W_f = W_r$, the semiconductor optical device apparatus satisfiers both of $W_f \leq 3 \mu$, 500μ and $W_r \geq 3 \mu$ and 500μ , the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , 0.2μ , 0.1μ , and $W_r / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , μ , 0.2μ , 0.1μ , the semiconductor optical device apparatus satisfies either or

both of a conditions of $W_f \leq W_c$ and $W_r \leq W_c$, and $W_f = W_r$, the semiconductor device apparatus satisfies both of $W_f \geq 0.5 \mu$ and $W_r \leq 0.5 \mu$, the semiconductor device apparatus satisfies both of $W_f \leq 0.5 \mu$ and $W_r \leq 10 \mu$, the semiconductor device apparatus satisfies both $W_f / W_c \geq 0.02, 0.1$, and $W_r / W_c \geq 0.02, 0.1$, the semiconductor device apparatus satisfies both $W_f / W_c \leq 0.85, 0.7$, and $W_r / W_c \leq 0.85, 0.7$ and the semiconductor device optical apparatus satisfies either $W_f \geq W_c \geq W_r$ or $W_f \leq W_c \leq W_r$. The semiconductor layer containing the active layer includes a layer in which an In content of the compound crystal is 5% and 1% or higher, and wherein the In content of the compound crystal of the ridge type compound semiconductor laser is 10% or less.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \geq 0.2 \mu$ and a condition $|W_r - W_c| \geq 0.2 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \geq 0.5 \mu$ and a condition $|W_r - W_c| \geq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \leq 0.5 \mu$ and a condition $|W_r - W_c| \leq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \leq 5 \mu$ and a condition $|W_r - W_c| \leq 5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \leq 3 \mu$ and a condition $|W_r - W_c| \leq 3 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \leq 2 \mu$ and a condition $|W_r - W_c| \leq 2 \mu$, the semiconductor optical device apparatus satisfies a condition of $W_c \geq 2.2 \mu$ and $W_c \leq 50 \mu$, the

semiconductor optical device apparatus satisfies either or both of a conditions of $W_f \geq W_c$ and $W_r \geq W_c$, and $W_f = W_r$, the semiconductor optical device apparatus satisfies both of $W_f \leq 3 \mu$, 500μ and $W_r \geq 3 \mu$ and 500μ , the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , 0.2μ , 0.1μ , and $W_r / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , μ , 0.2μ , 0.1μ , the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f \leq W_c$ and $W_r \leq W_c$, and $W_f = W_r$, the semiconductor device apparatus satisfies both of $W_f \geq 0.5 \mu$ and $W_r \leq 0.5 \mu$, the semiconductor device apparatus satisfies both of $W_f \leq 0.5 \mu$ and $W_r \leq 10 \mu$, the semiconductor device apparatus satisfies both $W_f / W_c \geq 0.02$, 0.1 , and $W_r / W_c \geq 0.02$, 0.1 , the semiconductor device apparatus satisfies both $W_f / W_c \leq 0.85$, 0.7 , and $W_r / W_c \leq 0.85$, 0.7 and the semiconductor device optical apparatus satisfies either $W_f \geq W_c \geq W_r$ or $W_f \leq W_c \leq W_r$. The semiconductor layer containing the active layer includes a layer in which an In content of the compound crystal is 5% and 1% or higher, and wherein the In content of the compound crystal of the ridge type compound semiconductor laser is 10% or less, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

Applicant's arguments with respect to claims 1 – 53 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (703) 308-6238. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.



Delma R. Flores Ruiz

Examiner

Art Unit 2828

DRFR/PI

April 4, 2003



Paul Ip

Supervisor Patent Examiner

Art Unit 2828